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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF : ~~ALLEN~~

SERIAL No. : ~~Unknown~~ 10/092322

FOR : A BRUSH

FILED : ~~Herewith~~ 3-6-02

ATTORNEY DOCKET NO. : WPT 2-0030

Cleveland, Ohio 44114-2518
March 6, 2002

TRANSMITTAL LETTER OF 35 U.S.C. § 119 FOREIGN PRIORITY CLAIM
FOREIGN PRIORITY DOCUMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Applicant hereby claims priority under 35 U.S.C. § 119 for the above-identified U.S. patent application. This claim of priority is based upon **British Application No. GB-0106334.6, filed March 15, 2001.** A certified copy of this prior British application is enclosed.

Respectfully submitted,

FAY, SHARPE, FAGAN,
MINNICH & McKEE, LLP

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Express Mail Certificate

I hereby certify that this TRANSMITTAL LETTER and ASSIGNMENT are being deposited with the United States Postal Service by EXPRESS MAIL in an envelope numbed EV 020234115 US addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 on March 6, 2002.

Steven M. Haas

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

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In accordance with the rules, the words "public limited company" may be replaced by p.l.c., ~~plc, P.L.C. or PLC.~~

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[redacted]

Signed

Dated 28 January 2002

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

THE PATENT OFFICE
B
15 MAR 2001
NEWPORT

The Patent Office

Cardiff Road
Newport
Gwent NP9 1RH

1. Your reference — AW/P200621GB

2. Patent application number *(The Patent Office will fill in this part)* — **0106334.6** — 15 MAR 2001

3. Full name, address and postcode of the or of each applicant *(underline all surnames)* — Anthony ALLEN, Five Mile Caravan Site, Kingswells, ABERDEEN, Scotland, AB15 8PDD

   Patents ADP number *(if you know it)* 77300 88001

   If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention — A BRUSH

5. Name of your agent *(if you have one)* — W. P. Thompson & Co.

   "Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)* — Kings Building, South Church Side, HULL, East Yorkshire, HU1 1RR

   Patents ADP number *(if you know it)* — 0000158004

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*
–		

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day / month / year)*
–	

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

   a) any applicant named in part 3 is not an inventor, or
   b) there is an inventor who is not named as an applicant, or
   c) any named applicant is a corporate body.
   See note (d))

   No

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form	–
Description	5
Claim(s)	–
Abstract	–
Drawing(s)	1

10. If you are also filing any of the following, state how many against each item.

Priority documents	–
Translations of priority documents	–
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	–
Request for preliminary examination and search *(Patents Form 9/77)*	–
Request for substantive examination *(Patents Form 10/77)*	–
Any other documents *(please specify)*	–

11. I/We request the grant of a patent on the basis of this application.

Signature W.P. Thompson & Co. Date 14/3/2001

W. P. THOMPSON & CO.

12. Name and daytime telephone number of person to contact in the United Kingdom

Mr. A. J. A. Walker
Tel: 01482 223451

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Notes

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DESCRIPTION

"A BRUSH"

The present invention relates to a brush and more specifically to a brush for use in a cleaning tool for removing debris from the interior wall of a pipeline or well casing alone or in combination with solvents.

Due to operating and environmental conditions, oil, gas and water well casings and pipes require regular cleaning to remove debris and deposits which build up over time. A wide variety of cleaning tools for this purpose are known, including several which rely on bristles disposed in and around the outer surface of the cleaning tool.

One such cleaning tool is disclosed in GB-2299599 and comprises a body member having one or more cleaning pads each mounted in a respective recess in the outer surface thereof and secured in place by a removable retaining device. Each of the cleaning pads comprises a body which may be comprised of aluminium or polyurethane fibre compound from an outer face of which bristles protrude. The bristles are mounted to a backing material of fabric or soft rubber material which is bonded to the body.

Another such cleaning tool is disclosed in PCT/US93/08040 and comprises a cylindrical metal sleeve which supports a jacket of foam like material. A swath of steel bristles extends helical around the jacket. This helical swath comprises a fabric backing strip into which the steel bristles are inserted. To minimise the likelihood of the bristles coming loose from the fabric backing strip the bristles are formed from U-shaped staples which are inserted through the rearward surface of the fabric backing strip.

In the wire brush industry, wire brushes are made by inserting steel bristles into pre-drilled holes in a brush body. These bristles are held in place by:

1. The push-fit of the bristle bundle in the pre-drilled hole, and/or

2. The outward pressure applied to the hole sides by a staple which is wrapped round the wire bundle as it is punched into the hole.

Where the brush body is comprised of a relatively soft material, such as plastics or wood, it allows the "spring" in the staple to make a slight indentation in the hole side, into which the staple relaxes. This gripping action by the staple then resists the removal of the bristle bundle. However, when the bristle bundle is punched into a metal brush body, the staple cannot open up and grip the hole in the same manner due to the hard, non-yielding nature of the metal body. This means that the bristle bundle is only held in by the friction at the bundle itself and the friction at the staple against the side of the hole.

It is an object of the present invention to provide a brush for use in a cleaning tool of the general type described hereinbefore which provides improved bristle retention.

According to the present invention there is provided a brush comprising a first body and a second body mounted on the first body, the first body having a first set of holes therein and the second body having a second set of through holes therein corresponding in number and spacing to the first set of through holes, wherein the first body is moveable relative to the second body between a first position in which each hole in the first set is aligned with a respective hole in the second set to receive

therethrough a bristle bundle, and a second position in which each pair of holes is misaligned to clamp the bristle bundle, and means for retaining the first body in the second position.

In a preferred embodiment of the present invention the first body comprises a cylinder and the second body comprises a cylindrical sleeve in which the first body is coaxially received. The inner cylinder may be moved longitudinally relative to the cylindrical sleeve between the first and second positions, or it may be rotated. The brush may comprise part of a cleaning tool or be adapted to be coupled to a cleaning tool. Alternatively, the brush may form a portion of a length of drill string.

In an alternative embodiment of the present invention the first and second bodies define a cleaning pad which is adapted in use to be mounted on a cleaning tool such as the one described in GB-2299599.

The bristles may be of nylon. Alternatively, the bristles may be of wire, such as flame hardened steel or copper. Preferably, a staple or ring is wrapped around the inner end of each bristle bundle to further improve retention thereof between the first and second bodies.

The first and second bodies may be comprised of a resin fibre compound, for example, polyurethane fibre compound, or may be comprised of a malleable metal such as aluminium.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 shows a detail of a brush in accordance with the present invention in

which the first and second bodies thereof are in the first position; and

Fig. 2 which shows the first and second bodies in the second position to grip and clamp a bristle bundle.

Referring to the drawings the brush comprises a first body 1 and a second body 2. The first and second bodies 1 and 2 may be essentially planar and form a brush pad, or they may comprise a cylinder and an outer cylindrical sleeve slidable on the cylinder. In the detail of the brush shown in the drawings only one bristle bundle receiving hole is shown, but of course in the complete brush there are several bristle bundle receiving holes, the number, spacing and pattern of which is selected in accordance with the intended application. Each bristle bundle receiving hole is comprised of a through hole 3 in the second body 2 and a blind hole 4 in the first body 1. A bristle bundle 5 is located through the through hole 3 and into the blind hole 4.

As shown in Fig. 1 the first and second bodies 1 and 2 are positioned such that the through hole 3 is aligned with the blind hole 4. In this position the bristle bundle 5 can be freely inserted and withdrawn. As shown in Fig. 2 the first body 1 has been displaced relative to the second body 2 to form a staggered hole configuration between the through hole 3 and the blind hole 4. This staggered hole configuration effects a clamping action on the bristle bundle 5 and thereby prevent its withdrawal. To further improve retention of the bristle bundle 5 between the first and second bodies 1 and 2, a staple or ring 6 is wrapped around the innermost end thereof.

Once the first and second bodies have been displaced by the requisite amount, a locking pin/bolt or some position fixing method is applied to ensure that the first and

second bodies remain in the displaced position.

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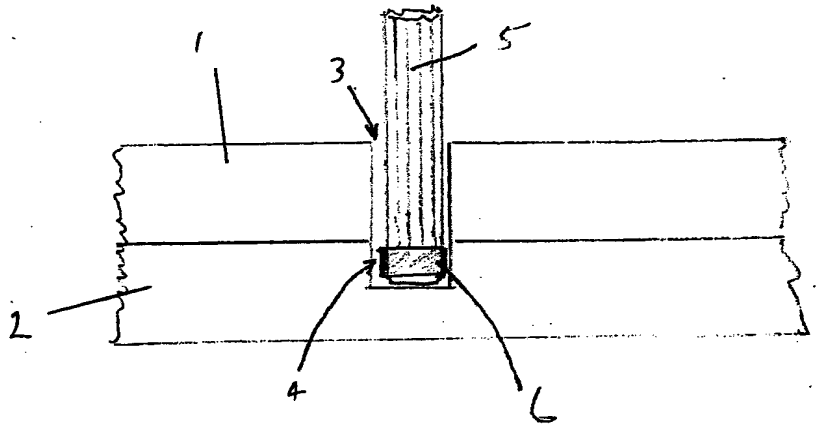

FIG 1

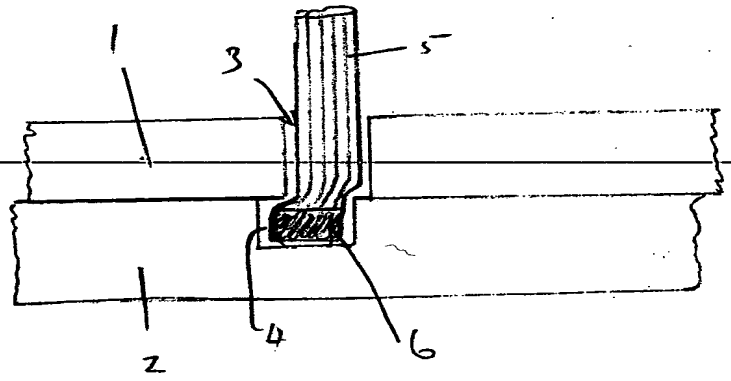

FIG 2